Versatile Lightning Cable with In-Built Jack

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Abstract-*The goal of this paper is to build up an assembly appropriate for use in assessing input signals coming from two different ports at the same time in only one connector. This relates to working of a lightning cable with audio jack. More particularly, working of a jack, using lightning cable power assembly for producing output from the jack without using extra adaptors. With the current Generation smartphones, the audio jack is removed, due to that lighting to audio jack adaptor is required hence earphones can't be used while charging your phone without specific adaptors. With this type of cable design, single lightning port will further evolve into both audio jack and/or lightning out. So users can use more accessories at the same time despite having a single port and without using any extra adaptors.*

The goal of this paper is two providing two ports in the same cable, by using the same power circuit by power harvesting for both of this port.

This type of design will provide seamless service to the user of a smartphone by elimination of frequent exchange of cable.

Keywords-Lightning Connector, Audio Jack, USB port, Mobile accessories.

I. INTRODUCTION

Since major smartphone companies were provided two separate ports, one is for charging and the other is for audio jack for listening to music. But in current scenario major smartphone companies are removing audio jack in their flagship phones and giving only one type of port for charging. And providing wireless ear pods for audio signals. Since this ear pods working is based on frequent charging of them and use them, which is somehow very bothersome.

The goal of using two ports in one cable can be accomplished by gathering and grouping existing perspectives of best practice and including esteem by recognizing key standards and thusly building up a Connector for surveying them.

This can be provided by gathering two ports in same connector, with this type of cable design, single lightning port will further evolve into both audio jack and/or lightning out.

II. BACKGROUND

A lightning cable currently invariably used commonly for earphone, charging etc., and at a time only one cable can be connected in one and only available port. Switching between earphone and charger cable will involve removing and re-connecting of cable frequently which is very tedious. To avoid frequent removal and re-connection of cables like earphone cable and charging cable a new invention in the form of combination of lightning cable with inbuilt audio jack and lighting out is being designed.

A. PROPOSED TECHNIQUE

Proposed Assembly consist of arm cortex A7 H3 processor development board with Debian os for processing and synchronization of data which arrived from USB IN and audio jack assembly. Here major block consists audio synthesizer unit, audio amplifier and Power Supply unit. Charging circuit is provided in usb such that power section of 5v, 1.2 A is used for entire processing of data signals with combine signal of audio jack. here voltage protection circuit is an electrical circuit is used to prevent an overvoltage condition of a power supply unit from damaging the circuits attached to the power supply. Audio amplifier unit is provided in the circuit which amplifies or strengthens very low-power electronic audio signals. Audio jack is provided which is used for analog signals.

The final output from audio jack and charging circuit is given at the final stage and so we get two different signals at the same time.

B. PROPOSED TOOLS TO BE USED

Proposed Assembly will need ARM Cortex A7 H3 Processor Development Board, USB Port, audio jack, power section unit 5V, Voltage Protection Circuit.

III. BLOCK DIAGRAM

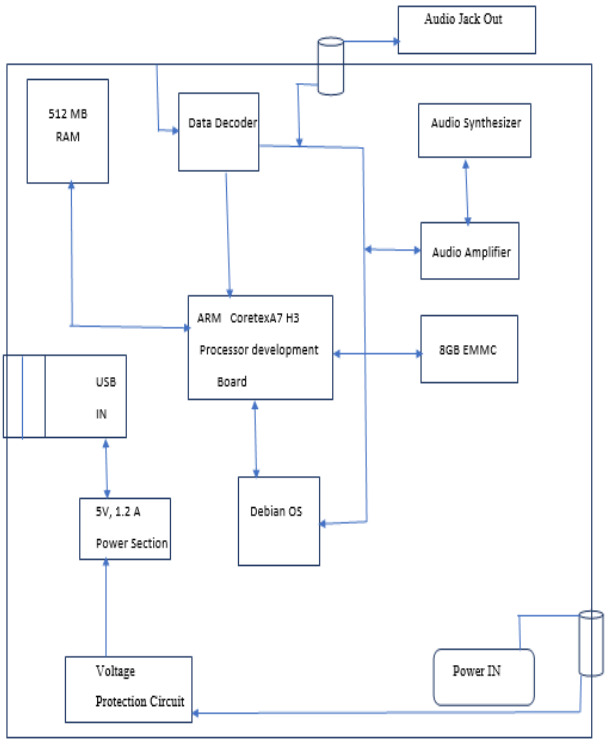

Fig.1 Block Diagram

Proposed Cable Representation

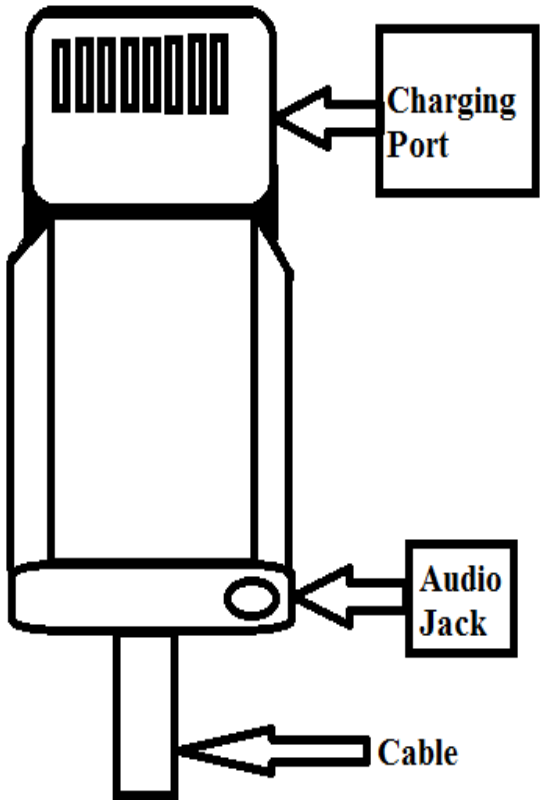

Fig 2. Proposed cable representation

A. Proposed Methodology Of Evaluation

To Eliminate the Need Of an Extra Adaptor combined two port connector is to be used in which data from audio jack is to be Synthesize and amplified with the help of audio synthesizer and audio amplifier A USB Port is provided in order for charging assembly followed by voltage Protection Circuit.

IV. EXPECTED OBSERVATION

After completing the testing on the development board, individual output of the charging port and of the audio port is checked and then simultaneous output from the charging port and from the audio port is verified in order to provide audio and charging at the same time. By using development board same power harvesting can be used for both of the ports for providing output signals at the same time and tested.

V. CONCLUSION

After Studying research paper it can be conclude that power received at the lightning connector can be used for both of the ports, for charging port and audio port.

Interfacing will be done with the help of Linux by shell scripting. from the development board the selection of power signals and audio signals can be judge and depending upon the input signals the output of the development board will be given to the user. This work shall eliminate the restrictions of use of earphone while mobile battery is low and when charging is required, hence provide consistent use of earphone in smartphones.

With this design we can save cost while adding functionality to cable without the hassle of extra adapters which are very easy to lose. This design has enormous commercial potential.

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